



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,969	03/16/2004	George Nerubenko	SMB-7038	2364
26294	7590	02/21/2006	EXAMINER	
TAROLLI, SUNDHEIM, COVELL & TUMMINO L.L.P. 1300 EAST NINTH STREET, SUITE 1700 CLEVEVLAND, OH 44114			NGUYEN, XUAN LAN T	
			ART UNIT	PAPER NUMBER
			3683	
DATE MAILED: 02/21/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/801,969	<b>Applicant(s)</b> NERUBENKO, GEORGE	
	<b>Examiner</b> Lan Nguyen	<b>Art Unit</b> 3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 2-10 and 22-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 11-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's confirmation of the election without traverse of Species E (figures 7-9) in the reply filed on 12/12/05 is acknowledged. Applicant's understanding of the revisited requirement for an election of species as stated in the Office Action dated 8/12/05 is correct.

### ***Specification***

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: "active damping element".

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 14-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re: claims 14-21, claim 14 states " A method for damping torsional vibrations of a rotating shaft wherein said shaft includes a hub, a mass physically coupled to said hub via a first spring and coupled to said hub via a second spring and electromagnetic

Art Unit: 3683

bond". It is unclear if Applicant intends to claim mass 714 or mass 750 because: (1) mass 714 is physically coupled to said hub 705 via a first spring 712; (2) mass 750 is coupled to the hub 705 via a second spring 752 and an electromagnet bond 770; and none of mass 714 and mass 750 is physically coupled to said hub via a first spring and coupled to said hub via a second spring and electromagnetic bond. To further prosecution, claim 14 is being treated as having the preamble -- A method for damping torsional vibrations of a rotating shaft wherein said shaft includes a hub, a mass physically coupled to said hub via a first spring and said mass coupled to a second spring via an electromagnetic bond --.

Re: claim 17, it is believed that claim 17 should be claiming a positive 90 degrees as supported in paragraph [049] in the specification and not a negative 90 degrees. Claim 17 is being treated as claiming a positive 90 degrees.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 11, 12, 14 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Tossman et al (USP 3,637,169).

Re: claim 1, Tossman et al. show a damper for mitigating torsional vibrations of a shaft 21, rotating with an angular velocity about a longitudinal axis 11, and rotating

perpendicular to a plane of rotation, as in the present invention, comprising: at least one passive damping element 35, one active damping element 14, 15.

Re: claim 11, Tossman et al. show a damper for reducing torsional vibrations of a rotating shaft, as in the present invention, said damper comprising: a first spring 32, a second spring 14, 15, a mass 35 physically coupled to said first spring and electromagnetically coupled to said second spring for oscillation having a frequency, wherein said oscillation dampens said torsional vibrations of said shaft that correspond to said frequency, accelerometers coupled to the mass and the shaft for detecting the relative motion of said mass and said shaft, accelerators are not shown but inherent since Tossman uses the angular momentum, column 3, line 4, and angular displacement, column 3, lines 64 and 65 in the controlling scheme, a current generator for adjusting an electromagnetic bond hereby the second spring is coupled to the mass, a current generator is not shown but inherent since in column 4, lines 6 and 7, Tossman discloses that the current is fed to the coils 18, a computer coupled to said accelerometers and said current generator for detecting at least one undesired torsional vibration, determining a corresponding dampening spring stiffness improvement, and signaling current generator to adjust current in order to implement said improvement, see column 4, lines 6-16.

Re: claim 12, Tossman shows through out the disclosure that frequency and amplitude of said mass and said shaft oscillation and phase differential between mass and said shaft are calculated in order to damp the rotational frequency of the spacecraft.

Re: claim 14, Tossman et al. show a method for damping torsional vibrations of a rotating shaft 21 wherein said shaft includes a hub 27, a mass 35 physically coupled to said hub via a first spring 32 and said mass coupled to a second spring 14, 15 via an electromagnetic bond, said method comprising: (i) oscillating said mass angularly with respect to said hub in a manner that absorbs energy with a resonance related to the total effective spring constants of the first and second springs, as shown in figures 1 and 2, (ii) identifying undesired harmonic motion in said mass relative to said hub, see column 2, lines 57-62, (iii) calculating applied current changes that, when applied by a current generator to said electromagnetic bond, see column 4, lines 6-16, change the total effective spring constant and improve dampening of the detected undesired harmonic motion, and (iv) applying said current changes, see column 4, lines 6-16. Note that the claimed feature "current changes" has been treated broadly in that a plurality of changes of the current from being on to being off is considered to be "current changes".

Re: claim 17, Tossman shows in column 4, lines 6-16 that when electromagnets 14, 15 are energized, they quickly dampen the vibration (i.e. harmonic force with a frequency equal to frequency of actual external force).

Re: claims 18-20, even though Tossman does not show the transducer, accelerometers and frequency detector, they are considered to be inherent in Tossman's system since Tossman discloses the use of angular momentum, column 3, line 4, angular displacement, column 3, lines 64 and 65, rotating frequency, column 3, line 6, in the controlling scheme as described in column 4, lines 6-16 wherein the coils

Art Unit: 3683

18 are energized based on the changes in the angular momentum to dampen rotational vibration.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tossman et al. in view of Wang et al. (USP 6,598,717).

Tossman's damper and method, as rejected in claims 11 and 14 respectively, lack the spectrum analyzer as claimed. Wang et al. teach the use of a spectrum analyzer 130 in figure 10 as an old and well-known device for signal processing. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Tossman's damper and method to have included a spectrum analyzer as taught by Wang since spectrum analyzers are old and well known devices for signal processing.

***Allowable Subject Matter***

9. Claims 15 and 16 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

10. Applicant's arguments filed 12/12/05 have been fully considered but they are not persuasive.

- Applicant argues about the claimed "active damping element" to comprise a complete feed back system. Applicant's argument is more specific than the claim language. Tossman clearly shows elements 14, 15 as an "active damping element". Perhaps, Applicant would like to further specify this claimed feature.
- Applicant's argument about the 112, 2<sup>nd</sup> paragraph rejection of claims 14-21 is non persuasive. Mass 714, as argued by Applicant, is coupled to the hub 705 via the first spring 712. However, mass 714 is not coupled to the hub 705 via the second spring 752 and the electromagnetic bond 770, as clearly illustrated in figure 7.
- Applicant's argument about claim 11, that the cited portion of column 3, line 4 of Tossman to show the use of angular momentum does not imply the existence of the claimed accelerometers. It is believed that angular momentum is a result of angular velocity and mass. The specification of the instant invention has been further reviewed to show that Applicant uses the term "accelerometers" without further details of structure or functions. The specification of the instant invention further shows a number of formulas using the angular velocity but none uses acceleration. It is deduced that the "accelerometers" are for measuring angular velocity. Tossman is using the angular momentum, which is the result of angular



velocity and mass, to control the damper. Applicant is also using angular velocity to control the damper. Inherently, Tossman's damper would have devices to measure the angular velocity. Such devices would be accelerometers as Applicant's accelerometers. Applicant further argues about coil 36 being energized by a constant source. Elements 14, 15 are cited for the rejection and not element 36 of Tossman. Furthermore, column 4, lines 1-16 of Tossman show that the current is adjusted for elements 14, 15.

- Applicant argues with regard to claim 14, that Tossman does not show "the step of calculating applied current charges that, when applied by a current generator to an electromagnetic bond, change the total effective spring constant and improve dampening of the detected undesired harmonic motion. '169 does not teach, show, disclose, or suggest that the '169 device performs any calculations-- instead, the '169 device is pre-tuned by the formula of col. 3, line 10." It is believed that "pre-tuning a device by a formula" is the equivalent of "calculating applied current charges" since using a formula would require a certain amount of calculation.

For these reasons, the rejections are still deemed proper and are repeated above.

11. Applicant is reminded that the status of claim 2 is (withdrawn) and not (Original).

### ***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Nguyen whose telephone number is (571) 272-7121. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James McClellan can be reached on (571) 272-6786. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/801,969

Page 10

Art Unit: 3683

Lan Nguyen  
Primary Examiner  
Art Unit 3683

*Lan Nguyen* 2/16/06